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Arbor Day.

THE highest purpose which can be served by the observance of Arbor Day is to increase popular knowledge in regard to trees. The forest-problems which confront us cannot be dealt with efficiently until an active public opinion is aroused; that is, until the great mass of people have become so well informed as to the nation's needs that they will compel the establishment of an enlightened forest-policy. Nor can good taste in regard to tree-planting for ornament ever become general so long as the great bulk of the people grow up without being able even to call by name the trees under whose branches they pass every day. It is a fortunate thing, therefore, that this celebration has become a children's holiday, for few people who do not begin to study trees early ever acquire any adequate knowledge of them later in life. That the idea of instruction has been a fundamental one in the observance of Arbor Day is proved by the number of addresses delivered on that occasion. But sometimes those who arrange for the celebration are apt to think that any man who can talk fluently is capable of instructing children in such a simple subject as trees and their uses, and that any minister, lawyer or editor can rise up and deliver an address off-hand which will not only interest the children but give them all the instruction they need. Of course, this is a mistake. Whatever is said to make the day one worth observing must come out of the fullness of knowledge and experience, and whatever is done should be done with forethought and deliberation if it is to have any educational value.

But where shall the teaching of the children begin? It certainly cannot be out of place, at the outset, to give them an object-lesson in the proper method of planting trees. In order to plant them to the best advantage the ground should have been prepared last fall. The holes to receive the roots should have been dug wide and deep and the ground shoveled back again and left for the winter to settle, and in the centre of this a fresh excavation should be made large enough to receive the roots in their natural position, and about them the fine earth should be carefully sifted and rammed down tightly, so that the roots and the earth should come into the closest contact. Trees dug up with few roots and thrust carelessly into a hole may live, but any one who has marked the difference between a starved and dwarfed tree and one which has developed to its full proportions, with sturdy growth and ample foliage, will understand why it is worse than a waste of time to do the work of planting in any other than the best manner. There is no need here to give any further details, but it is certainly worth while to instruct children as to the very best methods of planting and to explain the reason for every step in the process until the final staking is done, and to explain, still further, that the care of the tree does not end at this point, but, in reality, just begins, and that years of watchfulness can alone insure the development of a perfect specimen.

Of course, very little can be learned about trees and tree-planting if the subject is only touched upon one day in the year. If it were made a part of the ceremony of Arbor Day in every place to examine the trees that had been planted the year before, and to report on their present condition, it could be ascertained whether the enthusiasm of the planter was fictitious or so genuine that the regard for the trees had continued throughout the year and had expressed itself in proper care and protection. If these ceremonies inspire the young people who take part in them with something like an affectionate interest in the trees that are planted, whether as memorials of persons or of events, or because they are dedicated to or adopted by some special class, they will be much less likely to suffer from lack of oversight. This is one of the cases where the influence of sentiment, which practical people so generally scoff at, can be directed to practical purpose. The young people, who are anxious to see the trees they love increase in strength and beauty, are in the mood to receive instruction as to the proper mode of pruning where this is needed, as well as the most effective means of guarding against insects and disease and the attacks of animals. All this means that Arbor Day should be the culmination of instruction which should continue throughout the year, and should broaden out until school-children are familiar, not only with the names of native trees, but with their special uses and their special habits, and until they can give an intelligent reason in every instance why a tree of a particular species should be selected for a particular place or a particular purpose. They should know how to plant it, so that it would be reasonably sure of vigor and long life, and they should know how to care for it afterward intelligently.

It is only when Arbor Day exercises take such a practical and definite character that much good can be expected of them. The music and the oratory will be of little avail without something substantial in the way of example and instruction. It is of the first importance that young people should grow up to know more about trees before they can give any proper thought to their true relation to the life and welfare of the people. We shall never have a national forest-policy that is of any value until every farmer in the country has been instructed from his youth up in the care of his wood-lot, and every dweller in town has been brought in the same way to have a life-long interest in the care of the trees along the public highway. And when we turn from the economic aspect of tree-planting to its æsthetic side we can say, with equal truth, that trees will never have for us as a people that poetic charm, they will never fill us with that deep delight, they will never express to us those ideas of grace, mercy and peace which it is theirs to give, unless we are attracted to them in early life and feel their influence growing with our growth and strengthening with our strength.

WE have recently seen a photograph, taken in the sculpture-gallery of the Salon exhibition at Paris last spring, of a statue which the Government has since purchased for the outdoor decoration of the city. It is called "The Gardener," is explained as "a design for a fountain," and is the work of Monsieur Jean Baffier, a young sculptor who has recently attracted much attention in France, is a follower of the famous Rodin, and, therefore, we need hardly explain, is a member of the most pronounced branch of the modern realistic school.

Now, while a statue of a gardener might easily be conceived in a thoroughly idealistic way—our first ancestor serving, perhaps, as the artist's inspiration—there is no reason why it should not be conceived in a thoroughly realistic way and still be a very beautiful work of art. The great desire of the modern sculptor is, of course, to escape from the rigid bonds of conventional modern attire; any figure from humble life, and especially any figure of a rural type, is more attractive to him than figures which have been "properly" attired by a tailor or a dress-maker; and M. Baffier's gardener, with his sleeveless shirt widely opened over his chest, his trousers stopping at the knee and revealing the sinewy legs below, and his slouched felt hat, resembling the hats worn by peasants in far-off classic days, is, indeed, a figure which any sculptor might gladly have handled. Moreover, M. Baffier, from the testimony of the photograph and from that of Parisian critics, has handled it extremely well. His man is young and vigorous, yet slender of form, and has a serious, beardless face. He is standing on an irregular rock, with one knee sharply bent that one foot may rest at a level considerably higher than the other; and his head is inclined so that he may watch the stream of water issuing from the massive, well-shaped pot which he holds in his right hand. The pose is at once natural and effective; all the lines are both emphatic and graceful; and the whole figure seems to be really in action—not merely posed to look as though it were.

Thus far the art is realistic, but is genuinely art. But in the pedestal of the statue the artist—for no French sculptor would entrust the mounting of a figure to an irresponsible hand—has abandoned the path of true art and entered the path of puerile artificiality. Not content with a figure which suggests life, he has given it a base which aims to produce an actual illusion of life. The rock on which his gardener stands is not artistically conventionalized, but is made to look as natural as possible; it is supported by large rough stones, simulating the effect of a rustic garden-mound; these stones are placed on a bed of real turf; real plants are growing on this turf and in the crevices of the rocks; and among them, in very realistic fashion, falls a great stream of real water from the simulated watering-pot held by the simulated figure of the gardener.

Surely, naturalism must indeed be running riot in France to-day, when such a design as this can be praised by the critics and endorsed by the Government, and no voice be raised in protest. And we have thought it worth while to call the attention of Americans to the lack of true art in the placing of this statue, because we have so often recommended them to study French example as regards such matters. The figure itself is a real work of art; and, in so far, this fountain is superior to those iron dogs and sheep and deer which we used sometimes to see in American country-seats, so placed as to produce upon unwary eyes the impression of living animals. But in general idea as a would-be artistic conception, and in general effect as an ornament for park or pleasure-ground, this Gardener must be put in the same class as those long-dead iron animals. When the attempt is made to produce the illusion of life by the artificial uniting of natural and artistic elements, an ignorant eye may be tickled by the plausibility of the result; but any intelligent eye will resent the trick and will feel that, if the artistic work is good in itself, it deserved a distincter exaltation. Monsieur Baffier's fine figure would produce a much better effect if it were mounted on an architectural pedestal, and if the water supposed to be distributed by its hand, were left to the observer's imagination.

Alpine Plants.

THE vegetation covering the slopes of our European mountains, as well as that on the great snowy peaks of the American Cordilleras and other ranges, has an individuality, a character of its own, striking even the most indifferent of tourists. In this flora all is dwarfed and on a small scale. The flowers alone, of relatively exaggerated size and generally brilliant in color, seem to be abnormally developed. The manner of growth of these plants is a surprise to those ignorant of their history and the causes of their peculiar appearance. While in the lowlands, large plants, with spreading branches and well-developed foliage, generally have flowers smaller than the leaves, the reverse is true in the higher regions. There we find a very small stalk, comparatively large, sometimes even very large flowers, and diminutive scarcely developed foliage often covered, especially at great elevations, with down, which protects the cells from the night frosts. In many instances this foliage is glabrous and leathery, so that the tissues are armed, as it were, for the struggle for existence. The leaf, close and thick in texture, is thus furnished with a solid skin, covered with a waxy coating, enabling it to withstand both the heat of the sun and excessive moisture. Species growing both in the shade and in the open show none of these characteristics, and their leaf-organs are for the most part soft and delicate. On the other hand, on dry and arid slopes, exposed to parching winds and a hot sun, we find many species covered with tomentum, as the Edelweiss, Senecio, Achillea nana, Hieracium, several downy Willows, Artemisia, Draba, Arabis tomentosa, etc. We also find there glabrous species, such as Azalea procumbens, Rhododendron ferrugineum, the crustaceous Saxifrages, several Silenes and Veronicas, all of whose leaves are hard, thick and shiny. In shade and moisture on wooded and northern slopes, we find Ferns, Mosses, Lycopodiums and Primroses with viscous or soft foliage, and a whole series of Saxifrages totally different from those dwelling in sunshine and which show soft and delicate characteristics. Another easily noticed peculiarity is, that while the Alpine flora in sunshine shows flowers of great size and vivid coloring, as the Gentians, Auriculas, Anemones and Violets, in the shade, on the other hand, we find them small and weak in color. Thus, the action of the sun's rays on vegetation at great elevations seems to be more intense than on the plains.

The annual varieties, so common in the vegetation of the lower country, are almost entirely wanting on the Alps and in snowy regions. The very short summer at these elevations prevents their accomplishing the full round of their existence. The only plants not perennial are some Rhinantheæ and one or two Gentians (G. nivalis, G. tenella) and Pleurogyne Carinthiaca. The perennial plants, with roots spreading at the base, always stretch out over the soil, whose protection they seem to seek against the harsh air, the chilliness of the nights and the hurricanes so frequent at these altitudes. Certain species, which, in our plains, form great and imposing trees, such as Salix, Arbutus, Betula, etc., are represented on the Alpine highlands by dwarfed and clinging specimens only a few centimetres high, as Salix retusa, S. reticulata, S. herbacea, Azalea procumbens, S. betula nana. We find in the fissures of the rocks and in the stony wastes, compact plants in the shape of close hemispheres, species of balls made up of an infinity of little branches packed tightly against one another and carrying at their tops a profusion of stemless and sessile flowers, placed in such a way that at the moment of flowering it is almost impossible to perceive the foliage through the mass of corollas with which they are covered. In these plants the leaves are generally small, overlaying one another, closely packed, and almost always hairy or pubescent. Among these are Androsace Helvetica, A. imbricata, A. pubescens, A. ciliata, Eritrichium nanum, Saxifraga cæsia and Silene acaulis. These close and dwarfed tufts produce a marvelous effect. They brighten the rocks and stony expanses and make an enchanting picture. On certain high Alpine slopes and bare elevated ridges large numbers of these dwarfed plants are found together, making the resemblance of a brilliant parti-colored carpet. In these localities the dwarf Myosotis (Eritrichium nanum) shows in great drifts of intense blue, a blue possessed by it alone. It seems no longer a Myosotis, but a jewel; its low, stemless flowers are so massed one against the other that the tiny and vividly blue

clumps are like a dash of the brush in a picture; but it is a blue no artist could ever render. This Alpine jewel, whose presence no botanist mentions elsewhere in Europe than on the high granite rocks of our mountains, is also found among the Rocky Mountains of the United States, whence a friend, a Swiss botanist, has brought me a specimen, which I have carefully preserved. Dwarfed and low, turning to the sun its masses of stemless flowers, which vary in tint from tender to deep rose color, side by side we find the Androsace glaciale; further on we see the yellow of the sulphur-hued Saxifrage, S. aphylla, the carmine and purple of S. oppositifolia, and S. biflora, and other parti-colored plants, which form a mass of rubies, as it were, sparkling on the mountain-side. Such a unique, charming sight is well worth an annual pilgrimage to the higher regions. There one may truly say, "Terrestria sidera, flores."

Geneva, Switzerland. *H. Correvon.*

Impotency of Pollen.

THE investigations made by Mr. M. B. Waite, of the United States Department of Agriculture, the results of which were presented before the Western New York Horticultural Society, have led to some interesting and valuable conclusions. It has long been a mystery why certain trees and orchards, growing apparently under favorable conditions in every way, failed to yield satisfactory crops of fruit; and these studies suggest what may prove a solution in many cases. The point which Mr. Waite tried to determine was the efficiency of the pollen of fruit-trees on the pistils of the same variety, and his experiments covered trials on the stigma of the same flower, on another flower of the same cluster, on one of a different cluster on the same tree, and on those of different trees. The study of the effect on the ovule of the same flower, and on those of the same cluster, was made, both by simply covering the cluster with paper-bags and by hand-pollinations. The hand-pollinations were made by removing all flowers except the ones to be operated upon, emasculating these before they opened, then keeping them carefully covered with paper-bags and applying the desired pollen at the proper time. The results are of especial value, because the number of experiments was very large. The first were made in a large orchard in Virginia, and as the season advanced the work was continued in the orchards of Messrs. Ellwanger & Barry, at Rochester. It was found that a large number of our more common varieties of Apples and Pears are nearly sterile when reached only by pollen of the same variety. To make sure that failure to fruit did not come from the method of manipulation instead of the inefficiency of pollen, many crosses were made, subject to the same conditions as the individual pollinations, and summaries of the figures were given, to verify the conclusions drawn. Observations showed that Pears which did develop fruit by being impregnated with pollen of the same variety, were generally different in shape from those which were cross-fertilized, being less dilated toward the blossom end, where the seeds are borne. This points toward an imperfect seed-development, even though the pollen had sufficient potency to develop the fruit. If the attempt were made to grow such seeds it would not be surprising to find most of them unfertile.

The varieties of Pears which the experiments thus far indicate to be self-sterile, are Bartlett, Anjou, Clapp's Favorite, Clargeau, Sheldon, Lawrence, Mount Vernon, Gansel's Bergamotte, Superfin, Pound, Howell, Boussock, Louise Bonne de Jersey, Souvenir du Congress, Columbia, Winter Nélis, Beurre Bosc, Jones's Seedling, Easter and Gray Doyenné. Those which appear to be self-fertile are White Doyenné, Le Conte, Kieffer, Duchess, Seckel, Buffum, Manning's Elizabeth, Flemish Beauty and Tyson.

Among Apples the following were found to be self-sterile: Tolman Sweet, Spitzenburg, Northern Spy, Chenango Strawberry, Bellflower, King, Astrachan, Gravenstein, Rambo, Roxbury Russet, Norton's Melon and Primate; while Codlin (partially), Baldwin and Greening are self-fertile.

The inefficiency of pollen in fertilizing flowers on the same plant is well known among vegetables, a fact which presents one of the chief difficulties in breeding new varieties. This is well illustrated by experiments with Cucurbets, at Cornell University. In the season of 1889 there was found among the many crosses being grown one Squash which appeared to possess qualities which would render it valuable for cultivation. The seeds of this were planted the following year, and among the large number of plants thus produced there was found just one, the fruit of which resembled that of the parent. This was a discouraging outlook for that line of breeding, and that year the attempt was made to fix this type by individual pollination. The earliest blossom had been crossed before the character of the fruit was known; this produced a perfect fruit, but all those furnished with pollen from the same plant grew for a brief time, withered and died. Other forms appeared throughout the field which seemed desirable, but only one plant of a type, so that crossing could not be resorted to, and to plant all the seeds, with the expectation of a crop with few or none like the parent, was out of the question. Individual pollination was the only way, and this proved the same in every case; of the 185 flowers thus treated that year, not one produced fertile seeds, although twenty-two carried fruits through to maturity. It was a tantalizing effort to watch forms more attractive than any in cultivation, apparently within the grasp and yet so far from it.

Hitherto this similar condition of affairs has not been suspected in fruit-planting, especially the fact that pollen from one tree may be unable to fertilize the blossom of other trees of the same variety. The first thought is to account for this latter fact by the much closer affinity of the same variety of fruit than of the same variety of vegetable produced from seed, owing to the very different physiological principles upon which they are propagated. To account for the opposite behavior of different varieties of the same fruit is not so easy, but, whatever may be the underlying cause, it will be of great interest to note whether two plants of the same variety which have been propagated from the same source, and under the same climatic and other conditions, will behave toward each other the same as two which have been subjected to very different conditions, both in the present and past generations.

The history of the Virginia Pear-orchard, which led to these investigations, is an interesting one. Many years ago the owner ordered a few trees of different varieties from a firm in New York state. These being planted near together proved so satisfactory that he ordered a large number of Bartletts alone for a commercial orchard. These were planted in a single block, and never bore satisfactory crops, with the exception of a few of the trees surrounding the original planting of mixed varieties. The disappointment, owing to failure of the undertaking, led to inquiries which brought about the present investigations. The orchard of Ellwanger & Barry, on the other hand, being largely of specimen trees, with but few of a kind, presents just the opposite conditions, and is noted for its productiveness.

It has been well known that certain varieties of Raspberries and Grapes have proved unproductive unless planted near other sorts, but this has been attributed to a deficiency in the amount of pollen produced. Closer observations may show that in some cases it is due rather to a lack of potency than to a lack of quantity.

In the transactions of the Illinois Horticultural Society for 1886 a case is reported in which the behavior of the Dewberry seems to bear on this point. One hundred plants were ordered of a nurseryman and set by themselves. These grew vigorously and blossomed full every year, but yielded only a few imperfect berries. Later it so happened that a plot of Blackberries were planted beside them; when these came into bearing the Dewberries began to fruit, and continued to do so regularly.

It is very evident that the practical lesson of these experiments is an emphatic warning against planting orchards in large blocks of a single variety, or planting isolated specimens for family use. It may succeed, but the chances of failure are far too great.

Cornell University. *Fred. W. Card.*

Notes on the Forest Flora of Japan.—X.

IN the last issue of these notes something was said of two Maples (Acer pictum and Acer Miyabei) which inhabit Yezo; scattered through the forests of this island are eight other species. Among them, growing only in the extreme north and on the high slopes, is a variety of our Mountain Maple, Acer spicatum, so like the New England form of this common tree that it is difficult to distinguish the two plants; Acer Tartaricum, var. Ginnala, a common Manchurian tree, not rare in northern Japan, where it grows in low, wet ground near the borders of streams, and now well established in American gardens in which it might be seen more often to advantage, as its flowers are very fragrant and the leaves of very few trees take on more splendid autumnal colors. In Yezo, too, Acer capillipes has been found; this is a species with small racemose flowers and thin, delicate, nearly circular, lobed leaves,

deeply cut on the margins. On Mount Hakkoda, in northern Hondo, where Acer capillipes is extremely abundant at 2,000 to 3,000 feet elevation above the sea, we found it in October, growing as a stout bush or bushy tree, twelve or fifteen feet in height, with delicate canary-yellow leaves, and secured a supply of ripe seeds.

In Yezo, Acer Japonicum and Acer palmatum are both common; these species, next after Acer pictum, are the most generally distributed Maples in Japan, and the only Maples which the Japanese cultivate at all commonly. They are both small trees, rarely, if ever, exceeding a height of fifty feet, and both, as is well known, varying remarkably in the size, form and cutting of their leaves. A few of the varieties of Acer palmatum, particularly the one on which the leaves are divided into narrow lobes and the one with pendulous branches, are favorites in Japan, where few of the numerous and monstrous forms of this tree, with which we have become familiar of late years in this country, are seen outside of nursery-gardens with a foreign trade and connections. Of these two trees the autumn foliage of Acer Japonicum appears the more brilliant; and some isolated trees of this species which we saw in October, high up on Mount Hakkoda, were as beautiful in color as a good American Scarlet Maple. These two Maples have not proved very satisfactory in this country, where they have a way of dying in summer without apparent cause. This is due, perhaps, to the fact that nearly all the plants brought here have been raised from degenerate nursery-stock, obtained in or near the treaty ports; and it will be interesting to watch the behavior here of plants raised from seed gathered in the forests of Yezo. For us these Maples have the advantage of retaining their leaves later in the autumn than our species, which are bare of foliage before the Japanese trees assume their brilliant colors; and this is true of many other Japanese and Chinese plants, like Ampelopsis Veitchii and Spiræa Thunbergii, for the autumn in eastern Asia is fully a month later than it is in this country.

Acer carpinifolium, which is occasionally seen in our gardens, is evidently extremely rare in Japan. There are a few plants in one of the temple-gardens in Nikko, and I saw a single wild specimen hanging over the bank of a stream in the mountains above Fukushima, on the Nagasendo, and was fortunate in obtaining from it a good supply of seeds. In Nikko, Acer carpinifolium is a handsome round-topped tree, perhaps thirty feet tall. It is well worth growing for its beauty as well as for the unusual form of the leaves, which resemble those of the Hornbeam, for which, at first sight, it might well be mistaken.

Acer Tschonoskii is common near the margins of Lake Chuzenji in the Nikko mountains, and a thousand feet higher is found as a common shrub in the Hemlock-forests which cover the slopes rising from Lake Umoto. It is a small bushy tree, perhaps twenty feet tall, with bright red twigs and ample leaves, not unlike those of Acer capillipes in shape and cutting, although in autumn they turn deep scarlet. We could not find a single seed of this pretty plant, which has probably never been cultivated. Acer rufinerve, hardly distinguishable from the Moosewood of our northern forests (Acer Pennsylvanicum), and Acer cratægifolium, both familiar now in our gardens, are rather common, especially the latter, in all the mountain regions of central Japan, and need no mention here.

Among the rarer and less-known species we found Acer diabolicum rather common in the neighborhood of Nikko, where it is a round-topped tree twenty to thirty feet tall, very like the European Sycamore Maple in habit and general appearance, with dull yellow-green leaves four or five inches across, which apparently do not change color before falling, and large dirty brown fruit covered on the nutlets with fine stinging hairs. This seemed the least beautiful of the Maples which we encountered in the forests of Japan. Acer distylum I only saw in the Botanic Garden in Tōkyō, and Acer pycnanthum, A. purperascens, A. argutum, A. parvifolium, and A. Sieboldianum, the last, probably, only a pubescent-leaved variety of Acer Japonicum, I looked for in vain.

Of Maples of the section Negundo, with the male and female flowers on separate plants and pinnate or ternate leaves, there are two species in Japan—Acer cissifolium and Acer Nikoense. The first is said to be common, and widely distributed from southern Yezo through the mountain ranges of the main island, but I only saw a few small plants in hedge-rows near Nikko, none of them half the size of specimens which may be seen in some Massachusetts gardens, where Acer cissifolium is a handsome, compact, round-headed little tree with slender, graceful leaves, delicate green in summer and orange and red in late autumn, and where it is one of the most distinct and satisfactory of the Japanese trees which have been tried in our climate.

The second Japanese Negundo, as it appears in the forests of Japan, is a distinct and beautiful tree, which, if it thrives in this country, will be a real addition to our plantations. Acer Nikoense, of which a figure appears on page 155 of this issue, grows to a height of forty or, perhaps, fifty feet, with a trunk twelve to eighteen inches in diameter covered with smooth, dark, slightly furrowed bark, and stout, rather slender branches which form a narrow round-topped head. The branchlets are thick and rigid, and are coated at first, like the inner scales of the ovate-acute winter-buds, the young leaf-stalks, the under surface of the young leaflets, the peduncles and pedicels, with short, thick, pale or rufous, villous tomentum; at the end of their first season the branchlets are dark red-brown and marked with numerous minute lenticular dots. The leaves are ternate, with stout rigid petioles an inch or an inch and a half in length, and ovate or obovate acute, long-pointed, entire, or remotely and irregularly coarsely crenate leaflets, the terminal leaflet long-stalked, symmetrical and wedge-shaped at the base, the lateral leaflets rounded on the lower, and oblique on the upper edge at the base, and sessile or nearly so. The leaflets are thick and rather rigid, two and a half to five inches long, an inch and a half to two inches broad, conspicuously reticulated, dark yellow-green on the upper surface, pale and coated on the lower surface with pubescence, which is rufous on the stout midribs and broad straight veins, or sometimes bright green on the lower surface and glabrous, except on the midribs and veins. In the autumn the leaflets turn brilliant scarlet on the upper surface, but remain pale on the lower. The flowers are yellow, half an inch across, nodding, and are borne in short, few, usually three-flowered, subsessile, terminal corymbs on slender, graceful pedicels. The sepals and petals are ovate or obovate, rounded at the apex and contracted at the base into narrow claws; in the sterile flower, in which the ovary is reduced to a minute rudiment, the stamens, which are inserted between the lobes of the conspicuous disk, are exserted; the filaments are filiform and the anthers are large and oblong; in the fertile flower the stamens are rudimentary, and not longer than the ovary, which is coated with thick pale tomentum and crowned with a long stout style with revolute stigmas. The fruit is three inches long, with remarkably thick and hard-walled puberulous nutlets and broad, falcate, diverging or converging obovate wings, rounded at the apex.

Acer Nikoense is not a common, although a widely distributed, species. I saw a number of plants in the temple-grounds of Nikko and on the road between Nikko and Lake Chuzenji, a single tree near Agamatsu, on the Nagasendo, and ten or twelve more on the Yusui-toge above Yokokawa. According to Maximowicz,* who distinguished this tree nearly thirty years ago, it grows as far south as Nagaski. Acer Nikoense is practically unknown in gardens, although a single small plant was sent from Japan two years ago to the Rixdorf Nurseries in Berlin, and a figure of a leaf taken from this specimen was published in the *Gartenflora* last summer (page 149).

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* *Mél. Biol.*, vi., 370; x., 609; *Bull. Acad. St. Pétersbourg*, t. 76.—Franchet & Savatier, *Enum. Pl. Jap.*, i., 90.—Pax, *Engler's Bot. Jahrb.*, vi., 205.; *Gartenflora*, xli., 149. Acer Maximowiczianum, Miquel, *Arch. Nér.*, ii., 473, 478.

In September we hunted the Nikko hills in vain for a seed-bearing tree, and had given up all hope of introducing this species. One day late in October, however, we sat down on the rocks in the bed of a torrent far up on the side of Mount Koma-ga-take, in central Japan, to eat our luncheon, when our attention was attracted by some large Maple-seeds which were new to us floating in a pool at our feet. A search on the bank above discovered a single tree of Acer Nikoense, from which the wind was scattering showers of seed. If we had been a day later, or had selected another resting-place, we should have missed one of the best harvests we made in Japan,

Fig. 26.—Acer Nikoense.—See page 153.

as this single tree yielded at least half a bushel of good seeds.

If Acer Nikoense proves hardy and flourishes in our gardens, it will be particularly remarked for the brilliancy of its autumn foliage, which is not surpassed in beauty by that of any other tree which I saw in Japan, and which, unlike that of most trees, is only bright-colored on one surface. *C. S. S.*

Cultural Department.

Hardy Perennials for Cutting.

NO garden can be considered complete without a serviceable border of hardy perennials for cutting. Although there is never at any time a general display, except, perhaps, when Squills, Narcissi and other spring-flowering bulbs are in bloom, something of interest may be had continuously, and by judicious selection it is possible to have at all times a good supply of cut flowers. Flowers in early spring are especially appreciated, since considerable time must elapse before a general display of summer-blooming annuals, like Sweet Peas, Stocks, Poppies and Asters, may be had. New or rare kinds are not always satisfactory to the amateur, but there are many of free and easy growth which can be thoroughly recommended.

Lenten Roses, mostly hybrids, or forms of Helleborus orientalis, are among the earliest flowers. These are bowl-shaped, white, sometimes shaded with green, or reddish purple, and often beautifully spotted. They are borne on leafy stems, and are very serviceable flowers to cut, keeping well for a long time. The best time to plant or to divide the clumps is in the autumn. Some of the best hybrids are Frau Irene Heinemann, Hofgarten Inspector Hartweg and Willby Schmidt. The Christmas Rose (H. niger) blooms in southern and eastern Europe during the winter, and imported roots are frequently offered in this country. It would be well to note here that it is not a very satisfactory hardy plant, at least in the New England states. Being disposed to bloom on the occurrence of a mild spell, it is sure to be cut down by the succeeding sharp frosts. Spring frosts usually injure the young leaves, and consequently it is rarely in a very thrifty condition.

The numerous species and varieties of Narcissus furnish some of the most beautiful spring flowers useful for cutting. While many of the newer and rarer garden hybrids are costly, there are common kinds in abundance which may be had cheaply enough to be within the reach of all, and it may be taken as an axiom that the cheaper they are the more satisfactory they will be. The common English Daffodil and its varieties are probably better known than any, and are seen in florists' windows from January until Easter-time, having been forced in greenhouses. The flowers are large, trumpet-shaped, borne singly on stout stems, wholly yellow in such varieties as Golden Spur and Trumpet Major, and with a white perianth, and yellow trumpet in Horsfieldi, and a primrose trumpet, with yellow perianth, in Obvallaris, the Tenby Daffodil. The Incomparabilis and varieties follow the trumpet section in their period of blooming, and are distinguished by a larger perianth and smaller trumpet, which is in these called the crown. Of this class the great Welsh Chalice-flower, Sir Watkin, is the best. It has a vigorous constitution and increases quite rapidly. The Poets' Narcissus is the latest of all to bloom. The flowers are white, with a small crown edged with red. It is, moreover, very sweetly scented.

Doronicum plantagineum excelsum is a very handsome early yellow blooming composite. It makes an excellent border-plant and furnishes a good supply of flowers for cutting. The Virginian Cowslip (Mertensia Virginica), with its lovely panicles of metallic-blue flowers, is ever welcome; the cut flowers are charming. This should always be planted where it can have especial care. It forms long tuberous roots; dying down very early in the season, it is apt to be overlooked and destroyed by hoeing. The common English Primrose and the more recent Primrose-Polyanthus hybrids have developed a beautiful class of plants for early spring border-work as well as for general house decoration. There are now strains producing flowers of all shades of red, purple, lilac, yellow and white. Heuchera sanguinea is a comparatively new and beautiful species from Mexico. It is suitable for the front rank of the border or for the Alpine garden. Its long, slender spikes of coral-red flowers are particularly beautiful and last for a long time. Sweet Williams (Dianthus barbatus), although rather unwieldy for cutting, have the affectionate regard of all flower lovers. These are best cultivated as biennials. Seeds may be sown in May, and, transplanted eight inches apart, they make nice clumps for shifting into blooming quarters in the spring following. Day Lilies (Hemerocallis) are among the most satisfactory border-plants. The flowers are of various shades of yellow. By taking H. Dumortieri, orange-yellow, early, H. graminea, sulphur-yellow, early, H. flava, yellow, summer-blooming, and H. Thunbergii, sulphur-yellow, late, a supply of these may be had for a long time. The flowers are sweet-scented and are effective for decorative work.

Pæonies generally suggest, in the popular mind, very showy, but rather coarse, double flowers. The single varieties are exceedingly handsome, and very appropriate for vases. The Maltese Cross, or Scarlet Lychnis (L. chalcedonica), is a very common border-plant, very bright and pure in color. In this respect it is unique. No plant gives so much satisfaction, taking care of itself perfectly; it remains, more or less, in bloom during the entire summer. L. vespertina plena is the double form of the common evening scented species of Europe. While healthy enough where established, it is safer to protect its rather fleshy root-stock with a few dry leaves. The Alpine Poppy (Papaver alpinum) and the Iceland Poppy (P. nudicaule) are more or less in bloom the whole season, and if picked when freshly opened will last two or three days. The colors of the first-named are mostly shades of red and white, of the latter yellow. In habit and constitution they are very much alike. These elegant little species are not quite happy in an ordinary border; they should have a space set apart, free from the shade of coarse-growing plants and also have the slight protection of leaves or Pine-needles rather than manure. Perennial Larkspurs are noble border-plants. Their majestic spikes of blue stand out distinctly. The double varieties are desirable for cutting, lasting well. By a little care in cutting away seed-stems, a supply may be had until late in the autumn. The double white Achillæa Ptarmica, although rather weedy in habit, is a free bloomer and quite indispensable where cut flowers are required.

Coreopsis grandiflora is a clear yellow flowering species, giving an abundance of blooms until late. It is rather biennial in character, but sows itself so freely that there is never any danger of losing it. The double as well as single varieties of Pyrethrum roseum and Potentilla grandiflora are general favorites in European gardens, where many fine-named varieties are cultivated. These should be grown in beds or borders by themselves and receive abundance of water in summer and light protection in winter. Thermopsis Caroliniana, a yellow-flowered member of the Pea family, makes a bright and attractive border-plant. Its handsome spikes of yellow flowers are useful in vases. Many other perennials might be added, but Helianthus decapitalus, single and double, Aster Bessarabicus, A. Novæ-Angliæ and the Japanese Anemones must close this list of useful plants, and these will furnish flowers from spring until autumn.

Wellesley, Mass. *T. D. H.*

Flowering Plants for Cool Houses.

SOME of the Boronias make a pleasing addition to the stock of spring-flowering plants suitable for cool-house culture. While the members of this genus are not extremely showy plants, they are neat and compact in habit and produce a great abundance of their small bell-shaped flowers; these are usually sweet-scented.

Boronias are not specially difficult to grow, and easily reconcile themselves to the ordinary conditions of a conservatory, as a temperature of about fifty degrees, some sunshine and a fair supply of water. A light, open compost is best suited to their needs, preferably consisting largely of peat. Attention should be paid to the drainage of the pots; stagnant water is highly injurious to Boronias, in common with all new Holland plants. Propagation is effected by cuttings, which should be made from firm growths, and planted in cutting-pots filled with peat and sand made quite solid. The cuttings should be kept close during the day, but have some ventilation at night. Some little care is required at this stage in order to keep the cuttings fresh and unwilted, without allowing enough moisture to accumulate in the frame or under the bell-glass with which they are protected, to create fungus.

During the summer months Boronias may be kept outdoors with less risk of red spider than if kept under glass at that season; they should be plunged in ashes and slightly protected from full sunshine by the use of lath shades over the plants. Among the best species are B. megastigma, the flowers of which are purplish outside and yellow within, B. elatior, rosy carmine, and B. Drummondii, pink-flowered in the type, but also having a white variation; all these are very attractive and free-flowering.

Eriostemum buxifolium is another good Australian shrub and

belongs to the same order as the Boronias. It thrives under the same treatment, but is somewhat more difficult to root, probably because the branches are slightly pubescent; it is frequently the case that woolly-leaved or woolly-branched plants are more difficult to strike from cuttings than are smooth-leaved and smooth-stemmed plants. E. buxifolius has small ovate leaves of dark green color, and through the late winter and early spring produces a great number of small pinkish flowers from the axils of the leaves. In habit this plant is dwarf and bushy; it is of comparatively slow growth and will not soon become too large for a small greenhouse.

The Acacias also include some of the most graceful of spring-flowering plants, and as hard pruning after the flowering season is good practice in their cultivation, it is not hard to keep these admirable plants within convenient size. The species of cool-house Acacias, of which there are many, are the most useful and also among the easiest plants to cultivate. They luxuriate in sandy peat-soil, but with some of the commoner species, as A. dealbata and A. pubescens, even this is not absolutely essential, a light open loam answering the purpose very well. After having bloomed they should be cut back quite severely, and then encouraged into new growth. During the summer they require to be plunged outdoors, and the lath shelter already spoken of is also quite beneficial to these plants. This course of treatment produces strong, well-ripened growth that may be depended on to give a good crop of flowers during the following winter and spring.

Among the most satisfactory species for general use are A. Drummondii, A. dealbata, A. pubescens, A. Riceana, A. armata and A. lineata, these presenting such distinct characteristics among them as to show quite plainly how many-formed this genus is, and also how beautiful. Seeds of some species of Acacias may be had from the leading seedsmen, but they are usually propagated from cuttings; these require to be planted firmly in sand or sandy peat, and to have slight bottom heat; they should also be kept rather close until rooted, providing always that sufficient ventilation is given to prevent damping off.

Holmesburg, Pa. *W. H. Taplin.*

City Gardening.

THIS seems the proper time to talk over the possibilities of city gardening, while the rising sun is stirring the fever in every one who has any gardening blood in his veins. In spite of the annual exodus from our cities, they are by no means deserted in summer. Among the permanent residents there are large numbers of flower lovers whose attention should be turned to the pleasure to be derived from simple expedients which will not only be satisfactory to the owner, but a continual pleasure to the community. This brings us to the point that for the average city dweller, window or balcony gardening is in all respects the most satisfactory, as the window-sill is often the only available place for growing flowers. For some reason this form of gardening does not seem to grow in popularity in New York, though one often sees behind the glass, or on the window-ledges, potted plants and flowers, proving that the taste is there and only waits development. This scarcity of window-boxes is striking, for it seems to me, after some observation, that mankind, or, perhaps, womankind, generally, has an inherent fondness for growing plants in boxes and unnatural conditions. In walking or driving through the country, one who observes gardens must notice that a large, if not the largest, portion of the cultivation of flowers is carried on in elevated boxes, pans and the like, even when there is available land by the acre. One often wishes that these boxes could be transferred to the ledges of city windows to brighten the dreary streets. There is a great field here for a concerted effort. Fancy the effect of a city block lighted up by a display of well-grown plants in all the available windows. Certainly the means are simple and the expense not great; in fact, a mere trifle for the effect which could be produced, for the plants best adapted for the purpose are the commonest and the cheapest, and the boxes are a very minor consideration. A street-garden is not the place for dainty effects, which would be dwarfed by the surroundings. Here we want gay, showy flowers and foliage and broad effects. The window-garden is one where we can safely give way to our inherent love for barbaric color and gay arrangements.

There are numerous varieties of boxes on sale, but as these are seldom of the measurements desired, it will be usually necessary to have them made to order. I have tried tile boxes, lined with zinc, and those made of iron, both of which are necessarily heavy, and on the whole I prefer a plain wooden box, simply constructed, of chestnut or walnut. This should be about eight inches deep, of the length desired and as wide as the ledge will admit, with simple brackets to support a slight projection. This box should be securely nailed together. When it is to occupy a position in full sunlight a partition should be put in lengthwise in the front part of the box, leavgin an air space of, say, half an inch between this and the front to keep the plant roots as cool as possible. By tacking a strip of oilcloth of some light-colored tile pattern around the box and finishing with moulding at the edges, one can produce a box as effective at a distance as the highest-priced article. A good effect can also be secured by using lincustra and bronzing or painting it tastefully—I trust none of the readers of Garden and Forest paint their boxes and tubs a fiery scarlet.

The boxes should have about three inches of broken charcoal for drainage, over which there should be a thin slice of sod, grass-side down, to keep the soil from washing through. There should be a few holes bored in each end of the box near the bottom to insure against excess of moisture from rains or overwatering. The soil should be rich, but open; good potting-soil, in short. The care will depend not only on the exposure, but, of course, on the various plants grown. A mulch of some kind is an advantage, Cocoanut-fibre, as odorless, being the best. Success will usually depend very much on careful watering, especially when plants requiring very diverse treatment in this respect are grown in the same box. If Nasturtiums or other plants requiring somewhat dry treatment are grown with those needing more frequent watering, an addition of some sifted sphagnum to the soil in which the latter are plunged will be helpful in obviating the necessity for frequent irrigation. For a sunny window a very bright and striking effect can be produced by a row of Nasturtiums (Tropæolum major), backed by a mass of Madam Pollock Geraniums. Any of the scarlet-flowered Zonale Geraniums are excellent in such a position if care is taken to select the summer-flowering ones. With the Nasturtiums should be grown a row of the variegated Gill-over-the-ground (Cylechoma) to cover the base of the Nasturtium-vines should they become bare. A well-grown box so planted would attract attention from the most careless observer. Perhaps frequent boxes of this character would be rather dazzling in a quiet city street, but there are numerous variations which will occur to every one familiar with flowers. In selecting plants for such positions preference should be given, as far as possible, to those with smooth foliage which will not collect dust, and are readily cleansed by showering. The best effect is usually secured by a very limited variety of plants. Of course, the desirable plants for boxes will vary according to the exposure. Plants will not flower in the absence of all sunlight, and in shady positions effects must be produced from plants with variegated, glaucous and silvery foliage. Vines are of the first importance in window-boxes, giving a touch of vivacity as they sway to every passing breeze. A beautiful effect can be produced by planting shallow trays, to fit the inside of the boxes, very closely in the fall with bulbs of Hyacinths or Narcissi, and bringing them out as they start in the spring. Even in the winter it is possible to secure a bright effect with small evergreens, such as Arbor-vitæs. A row of these is very pretty, and quite in harmony with the most formal architecture.

Elizabeth, N. J. *J. N. Gerard.*

Correspondence.

Cyclamens at the Columbian Exposition.

To the Editor of Garden and Forest:

Sir,—The exhibition of Cyclamens now in progress embraces eleven competing collections. Besides American and English firms, Vilmorin-Andrieux et Cie. represent France, and Haage & Schmidt, Germany. About twenty-five hundred plants are shown, the proceeds of sowings made from February 8th to February 16th of last year. Enough more are coming on, and are partially in flower, to more than double this number, but are not placed in competition. The plants were, therefore, but little more than a year from seed when the awards were made at the beginning of March. They should be considered commercially as well as æsthetically in passing upon their merits. Mr. Thorpe, who has managed their cultivation so well, and whose experience entitles his opinion to weight, considers plants of this age profitable to sell at about half the price required for those started in late summer or autumn and carried over to the second winter or spring. Such plants would be larger and bear a greater number of flowers, but the higher price would hardly compensate the grower for the increased cost of cultivation. The plants here are now accommodated by four-inch pots, and display from six to twenty flowers in good condition at once, ten or twelve being a common number.

They are all forms of Cyclamen Persicum and its garden variety, C. giganteum. Or we may, with Bossier, take both as garden varieties of C. latifolium, of western Asia and the islands of the Ægean Sea. A plant which has been in cultivation for a hundred and sixty years has had ample time to deviate from the original type. The range of color is not as great as that of the Primroses, being confined to white and shades of red. Viewed in mass little but color is observed at first, for the flowers are raised so well above the foliage that this is scarcely noticed except when near at hand or the plants are individually examined. An impression of great beauty of form and color is made, not of brilliant, but of restful shades. And the nearer view shows leaves of good shape and texture, pleasingly varied with spots and bands of lighter green; a pretty root-stock, compact and cleanly looking, seeming to lie on the surface of the ground, and bearing its ample stock of leaves and flowers; nodding buds, with the floral segments neatly twisted in a spiral. All these lead us to admire the so-called "Persian Violet," and pronounce it one of the best of winter-blooming plants.

A classified list of the various forms had been prepared by Mr. Thorpe, ample enough for purposes of study and comparison, without going too far into unprofitable minutiæ. Being seedlings there was some variation in each group, mostly in size and color of flower. They were placed under thirteen "types." The sub-groups under Cyclamen Persicum were Sanguineum, Rubrum, Album, "Wiggin's strain," and a "mixed type" left for some not easily brought under other heads. Under Cyclamen giganteum were Superbum, Atro-purpureum, Magnificum, Roseum superbum, Crimson King, Rosy Morn, Mont Blanc and Emperor William.

Several of the exhibits are large, the specimens reaching into the hundreds. That of R. & Q. Farquhar & Co., Boston, is one of the largest and makes the best impression as a whole. The plants run pretty evenly, being well grown and thrifty. Their Mont Blanc is the finest white in the exhibit, if not the best of any strain. It is a pure snow-white, only an occasional flower showing a trace of pink at the base of the petals, most noticeable in the lot known as Dame Blanche. The flowers are very large, some with segments more than an inch and a half across, and from two to two and a quarter inches long. They bear from six to twelve flowers on sturdy foot-stalks, which are three to four inches high. The same strain is shown in several of the exhibits and makes a good appearance in nearly all. The Giganteum superbum of the same firm has some individual flowers with petals two and a half inches long, but not as wide as those of Mont Blanc. They are parti-colored, the white ground splashed with red or colored with pink, and the throat a purple-magenta. Other good examples of the strain were in the exhibit of J. M. Thorburn & Co., New York, but with the ground more apt to be of pink. The Rosy Morn lot of Farquhar & Co. is also remarkable, ranging from a light to a deep rose color, with a throat of purple or crimson. The flowers are large and the plants bloom profusely. A fine lot of this type, of a very pure rose-pink, is shown by James Carter & Co., London, whose exhibit is large and excellent. Rosy Morn, as seen in the collection from Haage & Schmidt, makes fine, showy plants, but smaller-flowered; in that of J. C. Vaughn, Chicago, and of H. Cannell & Sons, Swanley, England, the plants are all superior. Wherever seen, the strain proved itself one of the best, being compact, thrifty and holding its flowers well up. Crimson King appears in two exhibits, Farquhar's and Carter's. They are handsome flowers of a bright rose-crimson, with a more deeply colored base of similar tints. Giganteum magnificum was shown by several houses, a white flower with a purplish crimson base, the ground not always pure, but blushed with pink. Fine examples of these are in the exhibits of Farquhar, Thorburn and Vaughn. The large and attractive flowers are frequently quite numerous, as many as twenty being counted in some stands. Emperor William is also a good strain, the ground a deep rose-pink, with magenta leanings and a purple or crimson base; flowers of good size. Those of Vaughn were quite noticeable, the flowers on rather tall but sturdy scapes. In the Roseum superbum class the ground is a light to an occasional deep pink-magenta, blotched with darker shades of purple or purple-magenta, the plants of good sturdy habit, as shown by Thorburn & Co. and Haage & Schmidt. Though not striking, it is a type with variation enough to be rather pleasing.

The Cyclamen Persicum strains did not appear in as many lots, and were less noticeable on account of their smaller flowers, but there were some choice plants among them. Persicum sanguineum has a very rich color, a bright red-purple. Some of this type, with velvety crimson petals, show the richest-colored flowers in the exhibit. Not many such were noticed, the type generally being devoid of the velvety appearance. Several of them were seen in a fair lot of very deep crimson, shown by John Gardiner & Co. They were also noted in a few cases in the lot of Farquhar & Co. and Carter & Co. The Album type is as neat and pleasing in its way as the Mont Blanc, though much smaller-flowered, the petals being about an inch and a half long. It is a very pure white. But two lots were shown, both by Philadelphia houses, Henry A. Drew and J. Gardiner & Co. In the "mixed" or unclassified sets quite a variety is discernible. Some come near the original wild plants of the Levant, the flowers with segments an inch and a half long and barely half an inch wide, the corolla white, with a bright claret-purple throat. They served well to indicate how far away from the type the gardener's art has carried the plant in its variations, for the contrast was great between these small, but pretty flowers, and the large ones of Mont Blanc and Rosy Morn, all of them being in the exhibit of Farquhar & Co. Three or four stands of the "mixed" type in a lot of Peter Henderson & Co. differed from others observed, having the ground-color rose-pink, neatly shading off by the thinning of the petals to a lighter tint at the upper margin, with a very pleasing effect.

Among so many seedlings some marked deviations from given types, showing tendencies to new forms, which might be fixed by careful selection, were to be expected. Some of the most distinct of these were taken out and placed by themselves, being provisionally designated "World's Fair Collection." They made an interesting study, both as showing how plants vary and how new forms originate. Some of these, colored like others in the exhibit, had corollas much more spreading, the petals being much less reflexed, in two or three cases so little turned back as to have a surface nearly flat. Such flowers presented a greater area when viewed in front, thereby increasing the color-effect when they were separately considered. But this was hardly a compensation for the loss of that striking peculiarity which gives so much individuality to the flowers of that group of Primulaceæ comprising but two small genera, Cyclamen and Dodecatheon. When a change goes so far as to obscure or destroy the most original feature of a plant, in itself desirable, it is obviously not an improvement, however interesting it may be as a novelty. We sometimes feel like calling a halt to the gardener. The change in this case was a kind of arrest in development, the petals having been fixed at an angle which they must all pass through on the way from the opening bud to the fully expanded flower, and on looking through the greenhouse some might be seen in this position. One of the most variable specimens of this kind, with a corolla quite flat, or subrotate, had a diameter of nearly four inches. It was of the purest color, a delicate rose, and showed this so efficiently by its attitude that one felt like forgiving it for its abnormal shape. Another flower of ordinary form and medium size was very distinct in its markings. The ground was a somewhat dull rose, and was quite regularly penciled with numerous narrow lines of varied length, running lengthwise of the petals, and of a darker shade of the ground tint. Though the color was not of the best, the markings gave it a character differing from anything seen elsewhere.

Englewood, Chicago, Ill. *E. J. Hill.*

The Forests of the South.

To the Editor of GARDEN AND FOREST:

Sir,—Under the heading of "Hardwood Timber in the South," GARDEN AND FOREST for January 11th had an extract from an interesting article by Dr. Mohr, of Mobile. The writer was quite correct in his statements as to the vast quantities of timber in West Virginia, Arkansas and the Yazoo delta of Mississippi, but I think his estimates of the quantity of hardwoods in eastern Kentucky and Tennessee are too high. It is a well-known fact, for instance, that the yellow variety of the Tulip-tree, Liriodendron Tulipifera, only grows well in cool, well-watered ravines. The tree can grow on the hard, gravelly soil of the Trenton limestone and Cincinnati or Hudson River group, which forms the principal part of the highland rims and Hickory barrens of central and eastern Kentucky and Tennessee, but it is of the white variety, small in size, stringy in quality, and inferior to good Cottonwood. In the same way, Oak, Ash and Hickory deteriorate in quality and decrease in quantity on these dry, often gravelly uplands, of which so large a part of these two states consists. East of the Cumberland range in Kentucky, and of its continuation, Walden's Ridge, in Tennessee, the broken, well-watered calcareo-siliceous soil forms the finest possible land for luxurious tree-growth of all kinds. Still further east, between the Smoky Mountains and the Blue Ridge, the soft limestones and clays of the Quebec

and Niagara groups are equally favorable to plant-growth. In the common sense of the term, central and eastern Kentucky and Tennessee may be said to be well wooded, but in a commercial sense, that is, as having an abundance of trees at least sixteen inches in diameter and forty feet to the first limb, so as to furnish logs for a good stationary saw-mill, the statement is not correct. The statement as to Obion County, in western Tennessee, founded on data taken in 1877, is now no longer applicable. Fifteen years ago that county was probably the most luxuriantly wooded county of the state, but the great saw-mills of Boyle, Stewart and Mengel have done their work, and one of them has succeeded so thoroughly that the supply has been totally exhausted and the plant dismantled and transferred to the Sunflower River country. The Patterson tract, as it is called, containing 3,000 acres of fine forest, is the largest body of timber-land yet untouched in western Tennessee, and its value is indicated by the fact that $40,000 was refused for it three years ago.

Another consideration which should be taken into account when estimating the value of timber is its variation by changes of climate. A prominent barrel-maker of Louisville told me that Kentucky White Ash was not nearly as good as Ohio White Ash and Indiana Oak for spirit-barrels, being too porous. It is a well-known scientific fact that the development of lignin is hindered and that of cellulose favored by a hot, moist climate. So, taking an extreme case, the Beech, which reaches its best development in the Ohio valley, although growing to a great size along the bayous of Louisiana, is yet so worthless that it is left to rot when cut down to make the roads in getting out Cypress. The White Pine along the French Broad River, in North Carolina, is far inferior to that on the flat plains of the Michigan peninsula, and the Calico Ash of the Yazoo delta is less strong and much more given to shrinking and warping than that grown farther north and on higher ground. Instances might be multiplied indefinitely, but these are sufficient. Mere mechanical tests for transverse strain or torsion are by no means adequate. The whole physiology of plant-growth is involved, and an investigation on this line has scarcely yet been attempted. When it is completed the result will add another and yet stronger argument to those already known, in favor of the preservation of our forests.

Chicago, Ill. *Henry L. Tolman.*

The Edelweiss.

To the Editor of GARDEN AND FOREST:

Sir,—Will you inform me if the Edelweiss, of which your Swiss correspondent speaks so slightingly, can be raised in this latitude? Even if it is true that a perfect imitation of the plant can be fashioned out of white flannel I should like to have a genuine specimen if possible.

Boston, Mass. *M. G.*

[Edelweiss is not a difficult plant to grow here, and requires no special care except with regard to water, since excessive moisture will injure it, as it will all down-covered plants. Most of the dealers who advertise hardy herbaceous plants in GARDEN AND FOREST can furnish plants of Edelweiss, and seed can be procured of all the leading seedsmen. It is sometimes found in catalogues under the name of Gnaphalium, which was its botanical name before the genus Leontopodium was established.—ED.]

A Country-seat in California.

To the Editor of GARDEN AND FOREST:

Sir,—In riding down the peninsula, on the northern end of which San Francisco is situated, the strong prevailing winds are distinctly indicated by the uniformly southerly lean of all the trees. In and around the city good specimens of trees are not often seen. The Australian Blue Gum is the most common, and is stately when grown naturally, but these specimens, dingy from fog and smoke and annually sheared, are far from beautiful; the same must be said of the Monterey Cypresses, Araucarias and other common trees. The indigenous trees have neither the stature nor symmetry to command admiration, and are, in fact, scrubby. Continuing down the peninsula on the bay side trees become larger and finer, until, when Menlo Park and Palo Alto, the site of the Stanford University, are reached, there are many really beautiful native Oaks and Laurels and very many fine cultivated trees.

In this vicinity are the finest country-seats in northern California, for within a few miles most of the wealthiest citizens of San Francisco have their country homes. On this stretch, lying between the bay and the ocean, frosts are light and not frequent, and the summer heat is not excessive. With good soil and beautiful natural surroundings it has not required much art to create beautiful home scenes. Among these, Sherwood Hall, the home of Mr. Timothy Hopkins, is, perhaps, the most beautiful, and certainly the best known. Its great fields of Sweet Peas and beds of Violets under the Live Oaks have made its name familiar throughout the country. Sherwood Hall was the country-seat of Moses Hopkins, one of the four builders of the Central Pacific Railway, and in a grove of about fifty acres of native trees he built a beautiful house. Good judgment was shown in sparing the native trees and in planting others that now seem a part of the original woodlands. The native Oaks are the White Oak (Q. lobata) and the Live Black Oak (Q. agrifolia), a low, dense, round-headed evergreen, very charming and well grown. The Laurel and Buckeye were also native, and I saw as fine young specimens of Pinus insignis, Douglas Spruce and other conifers as I have ever seen. These have been planted since the place was started. An Araucaria Bidwelli in front of the mansion, a perfect specimen, fully thirty feet high, is famous as the best tree of its kind in California.

Several of the California Fan Palms on the lawn are admirable, though not as large as the old trees of southern California, their native home. The largest are about thirty feet high, the upper half draped by the pendulous old leaves, which are persistent, as in Pritchardia filifera. There are very large specimens of Chamærops excelsa and superb specimens of Dracæna australis and Erythræas. These, with other Palms which are hardy here, give quite a tropical look to the lawn and grounds.

The middle of February is not the best time for a visit to Sherwood Hall, especially in this cold year. But here under the Live Oaks, looking exactly like the familiar pictures, the great beds of Violets were full of flowers, and filled the air with fragrance. A half-dozen men were busy picking them. These field-flowers are sent to the San Francisco market, as are great quantities of Roses and other flowers from the large greenhouses. Sweet Peas and Chrysanthemums are grown in large quantities. In bequeathing this place to his nephew, Moses Hopkins failed to include a sum for its maintenance, and the younger Mr. Hopkins went into the sale of cut flowers, in which he made a signal success. The Sherwood Hall Nursery Company last year succeeded to the business. In addition to cut flowers, this company has more than fifty acres planted in flowers for seed.

Ukiah, Calif. *Carl Purdy.*

Recent Publications.

Fertilizer Farming. By Herbert W. Collingwood. Rural Publishing Company.

This is a pamphlet of some thirty pages, which is written to demonstrate that under certain conditions thin and poor lands can be brought up into proper condition by the use of chemical fertilizers, without any addition of barn-yard manure. The examples are striking and are drawn chiefly from market-farms on Long Island. In some cases it is shown that truck-farms, which had been profitably cultivated for generations, while they were annually enriched with the waste from Brooklyn and New York, together with tons of fish, have in later years produced, with commercial fertilizers alone, even larger crops than they yielded before, and at a great deal less expense. It might, in these instances, be argued that the carbonaceous matter left in the soil from the previous manuring had some influence in the case. Other examples are given, however, in which the land was a desert, with no soil whatever, and even these sand-barrens were made productive and profitable by the abundant use of commercial fertilizers. Of course, it is true that experience and skill on the part of the grower and perfect system in every detail are needed to win good crops from any soil, even with the aid of the costliest and most effective fertilizers. It is true, also, that these reported results cannot be repeated on lands not thoroughly drained, or on lands which, although of greater natural fertility, are so rugged that it is not possible to use the most improved machinery in tillage and cultivation. There is little need, however, to suggest caution in accepting the rosy views of what is possible to one who uses standard fertilizers with a liberal hand. Intense farming will hardly be undertaken by men who grow standard field-crops like hay and wheat and sell them for wholesale prices. It is the truck-farmer and the market-gardener to whom these examples appeal most strongly, and there is more danger that such persons will use too little fertilizer than that they will use too much. In horticulture and in concentrated agriculture, as men come to know

the needs of their lands and the needs of their crops, they will use the so-called chemical fertilizers more and more, that is, they will use manures which contain definite and known proportions of the various plant-foods, so that they can tell just how much potash and nitrogen and phosphoric acid, and in what forms and combinations, they are feeding to their crops.

The rather slighting way in which stable-manure is spoken of in the pamphlet does not add to the strength of the argument. Rich stable-manure will always fill a large space in farm-economy, and as farm-practice approaches toward the exactness of a science this manure will itself have a much greater and more uniform value. And it will always be the men who have learned to utilize to the best advantage the waste products of their farms who will use most intelligently, and, therefore, most liberally, the concentrated fertilizers of commerce.

Notes.

It would seem that some good White Pine still remains in Clearfield County, Pennsylvania. An account is given in a local paper of twenty-five sticks of Pine-timber, each one hundred feet long and cut by one man during the winter. At Belleville, a stick of Pine was drawn to the river which measured 113 feet in length and was estimated to be worth $100.

Mr. Richard T. Lombard, of Wayland, Massachusetts, in a paper recently read before the Horticultural Society of that state, stated that nearly four thousand florists are engaged wholly or in part in growing Carnations for cut flowers. It is estimated that fully two hundred millions of these flowers were sold last year, yielding above one million dollars to the growers.

At the World's Horticultural Congress, to be held in Chicago in August, papers are to be read on the following subjects: Technical Horticultural Education, Relation of Experiment Stations to Commercial Horticulture, Horticulture in its General Relation to Art, Improvement of Public Grounds (schoolyards, cemeteries, highways, the development and preservation of natural beauty).

Mr. Charles A. Green, Secretary of the American Association of Nurserymen, sends us the programme of the eighteenth annual meeting of that body, which is to open on the 7th of June, in a beautiful hall which has been built expressly for such gatherings, near the centre of the Columbian Fair Grounds, Chicago. The programme is an instructive one, and papers will be read by such well-known authorities as C. L. Watrous, T. V. Munson, Charles W. Campbell, Professor L. H. Bailey, J. H. Hale, Thomas Meehan, William C. Barry, B. E. Fernow, Robert Douglas, P. J. Berckmans, Parker Earle and many others.

Since there are hundreds of churches and Sunday-school buildings whose unpicturesque exteriors can be clothed with Ivy or other vines, and whose grounds could be planted with trees and shrubbery, so as to make them more attractive, it is suggested by the *Sunday-school Times* that the Sunday-school as well as the day-school might do well to have an Arbor Day. And, indeed, if the children of the public schools can on the day appointed help to beautify the public parks and village common, the roadsides and their own door-yards, there is no reason why the home-church and rectory or parsonage grounds should not receive similar attention. If Arbor Day is to have the influence which its founders and friends hope for, the more people and classes of people who can be made to take an active interest in its observance the better.

More flowers for Easter were sold last week in this city than in any previous year. In the church decorations white Azaleas were profusely used with Lilies, Lilium Harrisii being still the favorite, while the use of large Palms, Hydrangeas and Azaleas was very general. The flower-market in Union Square on Saturday morning drew together the largest number of buyers ever seen at a similar sale. Fully one hundred dealers were in attendance, and some of these sold three and four wagon-loads. The quality of the plants was generally good, notwithstanding the earliness of the season and the severe winter. Ascension Lilies sold at fifty cents, L. longiflorum at seventy-five cents for a plant having from three to five flowers, and L. Harrisii from a dollar to two dollars. Cinerarias, Spiræas, Deutzia gracilis, Cytisus, Roses, Lilacs, Pansies, Violets, Carnations, Stocks and Daffodils were favorites, and prices continued firm until the close of the sale.

Returning lately from a journey in southern France, Monsieur Edward André exhibited in Paris, before a meeting of the Société Nationale d'Agriculture of France, the fruits of various tropical trees recently produced in the south of Europe. Among them were fruits of Phœnix Canariensis, Phœnix Senegalensis, to which allusion has recently been made in these pages, and of Phœnix dactylifera, the Date Palm, fertilized with pollen from the flowers of the Canary Island tree which has now been established for many years on the shores of the Mediterranean. There were also fruits of the Chilian Jubæa spectabilis, which had recently ripened at Lisbon, and which is surrounded by a yellow pulp of agreeable flavor; and of Cocos australis of southern Brazil, which produces clusters of small, edible, rose-colored fruit. Hardly less interesting were the fruiting branches of the California Madroña, Arbutus Menziesii, which fruited last year for the first time at Antibes; of the south African Grape, Vitis Capensis, a curious species with evergreen entire leaves and fruit from which a high-colored red wine is made; and the Australian Nut, Macadamia ternifolia, whose hard shell contains an almond of exquisite flavor.

The last bulletin of the Ohio Agricultural Experiment Station puts into available form such instructions as to spraying orchards and vineyards as will be needed by persons who have not closely followed the work in this field for a few years past. Directions for preparing the fungicides and insecticides for various purposes are carefully given, as well as the proper methods and precautions to be used in applying them to different trees and against different enemies. There is no need to give a summary of this bulletin here as we have more than once published the various details it contains. We must repeat, however, that no one with an orchard, or a vineyard, or a small-fruit garden, can afford to neglect the practice which is here set forth, and persons who are not familiar with the methods cannot do better than to send to the Experiment Station, Wooster, Ohio, for the Bulletin No. 48. What is stated in the conclusion of this little pamphlet is perfectly true, namely, that the fruit crop of the single state of Ohio would be enhanced in value by several million dollars every year if this practice were generally followed.

Of the oranges now on the market, those from Messina and blood-oranges from Catania are in the best condition, the late Florida fruit being injured by frost. California oranges are gaining favor slowly, with the disadvantages of twelve to fifteen days' time consumed in reaching New York, against five or six days from Florida, and a cost of eighty-five cents a box for freight, instead of thirty-five cents for Florida oranges. Perhaps even a greater disadvantage is the fact that there are no commission consignments of California oranges to the east, and only dealers' orders are sent here. The Riverside Washington navels are the best California oranges now offered and bring a dollar a dozen. Excellent Forelle pears from California are now selling for two dollars a dozen, and the largest Easter Beurre for twenty-five cents each. Charleston vegetables are succeeding the Florida supplies at prices nearly as high as those asked for the earlier crops several weeks ago. Asparagus brings eighty-five cents a bunch, and peas one dollar and twenty-five cents a half peck. Northern-grown hot-house cucumbers are forty cents each. French Artichokes, from northern Africa, are thirty-five cents, and selected Tunis dates, on stems in boxes of a pound, are thirty-five cents.

Every American who takes a patriotic interest in places with historic associations will sympathize with the movement to set apart the Revolutionary camp-ground at Valley Forge for a public park. Some years ago the house known as Washington's headquarters here and a few acres of ground were acquired and restored by an association. The bill now before the legislature of Pennsylvania provides that the title to and ownership of 250 acres of land shall be vested in that state, so that the fortifications and their surroundings may be maintained as near as possible in their original condition as a military camp and for the enjoyment of the public forever. The establishment of the boundaries of this park, with the power to manage and maintain it, is to be vested in a board of ten unsalaried commissioners, appointed by the Governor, and a sum of $30,000 is appropriated for the purchase of the land and other necessary expenses. The price per acre is to be determined ultimately by the courts of Montgomery County, so that there can be no suspicion that the project will be turned to the advancement of any private interests. The forts and the line of entrenchments are remarkably well preserved, because the hills on which they were built are so rugged that they have had little value for agricultural purposes and have escaped tillage. A growth of thick underbrush has helped to protect them from washing by the rains. The view from the hills up and down the Schuylkill, extending for many miles, is very beautiful, and the plan seems commendable from every point of view.